**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application.

**Listing of Claims:**

1.-28. (Cancelled).

29. (Currently Amended) A base station apparatus comprising:

a partial-space orthogonalizing means for making a weighting process, for enhancing orthogonality over a propagation path for ~~the~~ a space division multiplex transmission, on a transmission data sequence to be sent by the space division multiplex transmission to ~~the~~a space-division-multiplex compatible mobile station allocated for the space division multiplex transmission within a communication area;

a beam forming section for forming a transmission beam to ~~the~~ a space-division-multiple-access compatible mobile station responsive to a transmission data sequence ~~to the space division multiple access mobile station allocated for space division multiple access~~ within athe communication area and an output of the partial-space orthogonizing means, the transmission beam to the space-division-multiple-access compatible mobile station being to reduce an interference with another space-division-multiple-access compatible mobile station to access simultaneously; and

a plurality of antennas for transmitting the transmission beam.

a deciding section for allocating the space-division-multiple-access compatible mobile station and the space-division-multiplex compatible mobile station by use of a predetermined space division multiplex transmission evaluation criterion and space-division-multiple-access evaluation criterion.

30. (Currently Amended) A base station apparatus according to claim 29, wherein forming the transmission beam for reducing the~~an~~ interference by the beam forming section is to form the transmission beam from the transmission data sequence to the allocated space-division-multiple-access mobile station and the output of the

partial-space orthogonizing means, in a manner being orthogonal to a channel estimation matrix on another mobile station to access simultaneously.

31. (Currently Amended) A base station apparatus according to claim 29, wherein, in a case that the space-division-multiplex compatible mobile station and ~~the~~ a space-division-multiplex uncompatible mobile station are allocated for the space division multiple access at a same time, the beam forming section makes, for the space-division-multiplex uncompatible mobile station, a maximum ratio synthetic beam as a transmission beam to the space-division-multiplex uncompatible mobile station and, for the space-division-multiplex compatible mobile station, aanother transmission beam as a beam for reducing an interference with another of the space-division-multiplex uncompatible mobile station and space-division-multiplex compatible mobile station to access simultaneously.

32. (Currently Amended) A base station apparatus according to claim 30, wherein, in a case that the space-division-multiplex compatible mobile station and ~~the~~ a space-division-multiplex uncompatible mobile station are allocated for the space division multiple access at a same time, the beam forming section makes, for the space-division-multiplex uncompatible mobile station, a maximum ratio synthetic beam as a transmission beam to the space-division-multiplex uncompatible mobile station and, for the space-division-multiplex compatible mobile station, aanother transmission beam as a beam for reducing an interference with another of the space-division-multiplex uncompatible mobile station and space-division-multiplex compatible mobile station to access simultaneously.

33. (Currently Amended) A base station apparatus according to claim 29, wherein, forming the transmission beam for reducing ~~an interference~~ the interference by the beam forming section is to form the transmission beam orthogonal to a channel estimation matrix on another of ~~the space~~a space-division-multiplex uncompatible mobile station and space-division-multiplex compatible mobile station to access simultaneously.

34. (Currently Amended) A base station apparatus according to claim 29, further comprising space-time coding means for making a space-time coding process

on ~~a transmission~~the transmission data sequence to the space-division-multiplex compatible mobile station,

the transmission data sequence space-time -coded being outputted to the partial-space orthogonizing means.

35. (Currently Amended) A base station apparatus according to claim 30, further comprising space-timecoding means for making a space-time coding process on ~~a transmission~~the transmission data sequence to the space-division-multiplex compatible mobile station,

the transmission data sequence space-time -coded being outputted to the partial-space orthogonizing means.

36.-38. (Cancelled).

39. (Currently Amended) A base station apparatus according to ~~claim 36~~claim 29, wherein the space division multiplex transmission evaluation criterion and the space-division-multiple-access evaluation criterion are to be calculated depending upon a channel estimation value and received quality received from the space-division-multiplex compatible mobile station and the space-division-multiple-access mobile station ~~of~~ within the communication area.

40. (Currently Amended) A base station apparatus according to claim 37, wherein the space division multiplex transmission evaluation criterion and the space-division-multiple-access evaluation criterion are to be calculated depending upon a channel estimation value and received quality received from the space-division-multiplex compatible mobile station and the space-division-multiple-access mobile station ~~of~~ within the communication area.

41. (Currently Amended) A base station apparatus according to claim 38, wherein the space division multiplex transmission evaluation criterion and the space-division-multiple-access evaluation criterion are to be calculated depending upon a channel estimation value and received quality received from the space-division-multiplex compatible mobile station and the space-division-multiple-access mobile station of within the communication area.

42. (Currently Amended) A base station apparatus according to claim 29, wherein, in a case that the space-division-multiple-access mobile stations include a space-division-multiplex compatible mobile station and a space-division-multiplex uncompatible mobile station, another transmission beam to the space-division-multiplex uncompatible mobile station is formed by use of a complex-conjugate-transposition of a channel estimation matrix on the space-division-multiplex uncompatible mobile station, and ~~a transmission~~the transmission beam to the space-division-multiplex compatible mobile station is formed in a manner being orthogonal to a channel estimation matrix on another space-division-multiple-access mobile stations to access simultaneously.

43. (Currently Amended) A base station apparatus according to claim 30, wherein, in a case that the space-division-multiple-access mobile stations include a space-division-multiplex compatible mobile station and a space-division-multiplex uncompatible mobile station, another transmission beam to the space-division-multiplex uncompatible mobile station is formed by use of a complex-conjugate-transposition of a channel estimation matrix on the space-division-multiplex uncompatible mobile station, and ~~a transmission~~the transmission beam to the space-division-multiplex compatible mobile station is formed in a manner being orthogonal to a channel estimation matrix on another space-division-multiple-access mobile stations to access simultaneously.